

Expert perspectives on the use of artificial intelligence in surgical endoscopy: Ethical and legal considerations in Türkiye

Ai in surgical endoscopy: Ethical and legal insights in Türkiye

Mehmet Alperen Avcı, Can Akgün
Department of General Surgery, Faculty of Medicine, Samsun University, Samsun, Türkiye

Abstract

Aim: Numerous AI-assisted endoscopic technologies have been developed to overcome the major limitations encountered in endoscopic procedures. However, the introduction of these new technologies has raised various concerns regarding ethical, legal, and accountability-related issues. In this study, we aimed to evaluate the ethical concerns and general perspectives of general surgery specialists and subspecialists in Türkiye regarding the use of AI in endoscopic procedures.

Materials and methods: This 31-item survey study, which assessed demographic characteristics, ethical concerns, and general perspectives, was conducted across Türkiye between May 1 and June 30, 2025.

Results: It was observed that the majority of participants had limited knowledge and a moderate level of concern regarding the use of artificial intelligence (AI) in endoscopic patient management, as well as the associated ethical and legal regulations. Participants emphasized that AI should be used as an assistive tool, provided that appropriate oversight and training are in place. Gastrointestinal surgeons expressed significantly greater concern about potential errors that AI systems might generate, whereas surgical oncologists were more supportive of using AI as an assistive tool. Meanwhile, general surgeons more prominently highlighted the necessity of formal education on AI.

Discussion: General surgery specialists and subspecialists in Türkiye have expressed their ethical and legal concerns regarding the use of artificial intelligence (AI) in endoscopy, along with the perceived need for regulation and education. It is of great importance to consider the perspectives of these specialists during the development and clinical integration of AI systems.

Keywords

endoscopy, ethics, artificial intelligence, liability

DOI: 10.4328/ACAM.22812 Received: 2025-07-16 Accepted: 2025-08-19 Published Online: 2025-08-29 Printed: 2025-09-01 Ann Clin Anal Med 2025;16(9):646-652

Corresponding Author: Mehmet Alperen Avcı, Department of General Surgery, Faculty of Medicine, Samsun University, Samsun, Türkiye.

E-mail: mehmet.avci@samsun.edu.tr P: +90 553 215 86 98

Corresponding Author ORCID ID: <https://orcid.org/0000-0003-3911-2686>

Other Authors ORCID ID: Can Akgün, <https://orcid.org/0000-0002-8367-0768>

This study was approved by the Ethics Committee of Samsun University (Date: 2025-04-30, No: GOKAEK 2025/9/14).

Introduction

Artificial intelligence (AI) refers to machine or computer systems that autonomously perform tasks by mimicking human cognitive functions such as learning, problem-solving, and decision-making [1]. Initially developed to assist in diagnostic processes in radiology, AI's major advantages include its ability to recognize structures and objects with high sensitivity and specificity, provide rapid algorithm-based reports, and deliver highly consistent results [2]. With rapid technological advancements, AI has attracted substantial attention and has increasingly been integrated into various aspects of human life. Today, AI applications are widely utilized in many fields of medicine, including diagnosis, treatment, drug development, support for patient-physician interactions, and even medical education [3-4]. In recent years, AI has generated considerable interest in healthcare, leading to discussions about whether AI-powered "robot doctors" could eventually replace human physicians in the future [5].

The integration of AI into endoscopic procedures has emerged as one of the key focus areas in current research, and the advancement of AI applications in medicine continues to evolve through numerous clinical studies in this field [6]. The main challenges in endoscopic procedures are associated with the complexity of real-time image interpretation and the risk of human error. Some of the most significant limitations in contemporary endoscopic screening and surveillance include interobserver variability in lesion detection, time-consuming biopsy protocols, sampling errors, and the potential to miss subtle or early-stage premalignant lesions [7]. To address these challenges, AI-assisted endoscopy technologies have been developed, and numerous AI tools have been introduced to enhance lesion detection, characterization, and diagnostic decision-making in endoscopy [8-9].

However, as with all widely adopted technologies, the use of AI in healthcare has raised ethical concerns. Issues such as data privacy and security, lack of transparency, algorithmic bias, accountability, and the mechanization of healthcare services have been subjects of debate [10]. Although there is a growing consensus regarding the potential benefits of AI, ethical and legal concerns remain prominent. This survey-based study aimed to evaluate the ethical concerns and general perspectives regarding the use of AI in diagnosis, patient management, and treatment planning during endoscopic procedures, based on the opinions of actively practicing general surgeons and subspecialists performing endoscopy in Türkiye.

Materials and Methods

This survey-based study investigated the general and ethical perspectives of general surgeons on the use of artificial intelligence (AI) in diagnosis, patient management, and treatment planning during endoscopic procedures. The study was approved by the Non-Interventional Clinical Research Ethics Committee of Samsun University (Approval No: GOKAEK 2025/9/14, dated April 30, 2025) and was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. The survey was created using the Google Forms platform and was pre-tested by a group of 10 active general surgeons performing endoscopy who were not involved in the

study. The final version of the questionnaire was distributed via email through the Turkish Surgical Society Secretariat and shared on social media platforms between May 1 and June 30, 2025, targeting active general surgeons, surgical oncologists, and gastrointestinal surgeons performing endoscopy across Türkiye.

Considering that approximately 3,500 active general surgeons and surgical subspecialists perform endoscopy in Türkiye, the sample size was calculated to achieve at least 157 participants for a reliable sample with an 80% confidence level and a 5% margin of error. To account for potential data loss, responses from at least 160 participants were targeted. The survey was originally developed and administered in Turkish. An English translation of the survey was provided as supplementary material (Table I). Informed consent was obtained from all participants, and participant confidentiality and anonymity were maintained throughout the study. Those who did not provide consent were not allowed to access the survey. The questionnaire consisted of 31 questions. The first six questions collected demographic information, including age, gender, years of professional experience (<5 years, 6–10 years, 11–15 years, 16–20 years, 21–25 years, and >25 years), academic title (Specialist, Assistant Professor, Associate Professor, and Professor), type of institution (State Hospital, University Hospital, Private Hospital, and Private Clinic), and surgical specialty or subspecialty (General Surgery, Surgical Oncology, and Gastrointestinal Surgery). Participants were then asked to respond to 25 questions related to three main topics: the use of AI in diagnosis, patient management, and treatment planning in endoscopy, as well as associated ethical concerns. The questions in these main sections included 17 items rated on a five-point Likert scale, while the supplementary section included additional questions using two- to four-point Likert scales (Table I).

Descriptive statistics were used to summarize the characteristics of the study groups. Quantitative variables were presented as mean $\pm$ standard deviation ($\bar{x} \pm SD$), and categorical variables were expressed as counts (n) and percentages (%). Differences between groups were analyzed using Chi-square tests. A p-value of less than 0.05 was considered statistically significant. All statistical analyses were performed using a commercial statistical software package (IBM SPSS Statistics for Windows, Version 22.0; IBM Corp., Armonk, NY, USA).

Ethical Approval

This study was approved by the Ethics Committee of Samsun University (Date: 2025-04-30, No: GOKAEK 2025/9/14).

Results

A total of 167 participants completed the survey within the specified study period. The female-to-male ratio among the participants was 21/146. The mean age of the participants was 42.12 ± 10.11 years. The majority of participants were general surgeons (n = 134, 80.2%) and those working in state hospitals (n = 90, 53.9%). The descriptive characteristics of the participants are presented in Table 2. A total of 49.7% of participants reported having a moderate level of knowledge about artificial intelligence (AI) applications (Question A1). Additionally, 44.9% stated that they had limited knowledge

Table 1. General overview and ethical concerns regarding AI in endoscopy: survey questions

	1	2	3	4	5
A. Artificial intelligence: level of knowledge regarding applications and ethics	A1. How would you rate your level of knowledge regarding artificial intelligence applications?				
	A2. What is your level of knowledge regarding the use of artificial intelligence in endoscopic procedures, particularly in the areas of diagnosis, patient management, and treatment planning?				
	A3. To what extent are you knowledgeable about the methods used by artificial intelligence applications to analyze patient data and the decision-making algorithms they employ?				
	A4. To what extent are you informed about the potential impact of artificial intelligence applications on physicians' independent decision-making processes?				
	A5. To what extent are you aware of the likelihood that artificial intelligence algorithms may produce biased decisions against certain patient groups when datasets are incomplete or unstable?				
	(For example, when data is primarily derived from patients within specific age groups.)				
B. Artificial intelligence: application and ethical concern	A6. To what extent are you informed about the ethical guidelines and legal regulations related to the use of artificial intelligence in healthcare, both in Turkey and globally?				
	B1. Please indicate your level of concern regarding data security and the protection of patient privacy during the use of artificial intelligence applications.				
	B2. Please indicate your level of concern about the possibility that artificial intelligence algorithms may produce biased or erroneous outcomes during their use.				
	B3. Please indicate your level of concern that, in certain situations, the use of artificial intelligence in clinical decision-making may restrict physicians' professional autonomy.				
	B4. Do you have any concerns that the use of artificial intelligence applications may negatively affect the physician-patient relationship?				
C. Artificial intelligence: implementation oversight and educational needs	B5. Please indicate your level of concern regarding potential legal liabilities arising from the use of artificial intelligence applications.				
	C1. In your opinion, should artificial intelligence applications assist physicians in the decision-making process?				
	C2. Do you think artificial intelligence applications should undergo comprehensive testing processes before being implemented?				
	C3. Do you think regular training should be provided regarding the use of artificial intelligence applications?				
	C4. In your opinion, should there be a mechanism to supervise or audit the decisions made by artificial intelligence applications?				
	C5. Do you think patients and their families should be thoroughly informed about the use of artificial intelligence applications?				
D. Supplementary questions on ethical awareness and concerns related to artificial intelligence	C6. In your opinion, should the performance of artificial intelligence applications be regularly evaluated?				
	D1. Do you use any artificial intelligence (AI) applications?				
	D2. What do you think about the possibility that the use of AI applications may lead to ethical problems?				
	D3. In your opinion, what should be the role of AI applications in clinical decision-making?				
	D4. In your opinion, who should be held responsible if an AI application makes an incorrect or faulty decision?				
	D5. Do you think the current legal regulations in Türkiye are sufficient to protect patient privacy in the context of AI systems?				
	D6. In your opinion, how might artificial intelligence affect the physician-patient relationship?				
	D7. Would you be interested in receiving training on the use of AI applications?				
	D8. Would you be interested in receiving training on the ethical principles related to the use of AI applications?				

regarding the use of AI in diagnosis, patient management, and treatment planning during endoscopic procedures (Question A2). Furthermore, 43.7% of the participants indicated that they had no knowledge of the ethical principles and legal regulations concerning AI use either in Türkiye or globally (Question A6). The majority of participants expressed a moderate level of concern regarding the ethical, legal, and data security aspects of AI applications (Question B). Furthermore, 52.7% of participants agreed that AI applications could serve as a supportive tool in physicians' decision-making processes (Question C1). Most participants strongly agreed that AI applications should be subject to oversight, that formal training should be provided regarding their use, and that detailed information should be communicated to patients (Questions C2–C6) (Figure I).

Regarding ethical concerns, 73.1% of participants agreed that AI applications could potentially raise ethical issues in certain situations (Question D2), and 77.8% supported the idea that AI should be used solely as an assistive tool (Question D3). Moreover, 47.9% agreed that shared responsibility should apply in cases where AI systems produce erroneous outcomes (Question D4), and 32.3% agreed that AI could serve as a bridge

in the physician-patient relationship (Question D6). Additionally, the majority of participants agreed that there is a lack of sufficient legal regulations regarding patient privacy and AI in Türkiye, and expressed the need for education on AI use and ethical principles (Questions D5, D7–D8). When the survey responses were analyzed according to participants' gender, years of professional experience, academic title, type of institution, and general surgery subspecialty, no statistically significant differences were observed in any question based on academic title or type of institution. However, statistically significant differences were identified in six questions based on gender, years of professional experience, and general surgery subspecialty ($p < 0.05$).

Concerns regarding algorithmic bias and erroneous responses of AI systems were significantly higher among male participants ($p = 0.007$) and gastrointestinal surgeons ($p = 0.046$), with these groups more frequently selecting the “quite concerned” option (Question B2). The rate of participants who had never used AI applications was significantly higher among male surgeons ($p = 0.038$) and those with more than 26 years of professional experience ($p = 0.009$) (Question D1). The belief

Table 2. Distribution of descriptive characteristics

		Mean±SD	Min-Max
1.Age		42.12±10.11	26-74
		n	%
2.Gender	Female	21	12.06
	Male	146	87.4
3. Duration of professional experience (Years)	<5 Years	37	22.02
	6-10 Years	39	23.04
	11-15 Years	32	19.02
	16-20 Years	18	10.08
	21-25 Years	13	7.08
	>26 Years	28	16.08
4. Academic title	Specialist physician	112	67.1
	Assistant professor	20	12.0
	Associate professor	19	11.04
	Professor	16	9.06
	State hospital	90	53.9
5. Type of institution you work in	University hospital	51	30.05
	Private hospital	22	13.02
	Private clinic	4	2.04
6. Subspecialty area within general surgery	General surgery	134	80.2
	Surgical oncology	18	10.08
	Gastrointestinal surgery	15	9.0

that AI applications would inevitably cause ethical issues was significantly lower among participants with 6–10 years (2.6%) and 21–25 years (30.8%) of professional experience ($p = 0.040$) (Question D2). Agreement with the statement that AI applications could assist physicians in the decision-making process was significantly higher among surgical oncologists ($p = 0.006$) (Question C1). Notably, gastrointestinal surgeons more frequently selected “strongly disagree” regarding the necessity of comprehensive pre-implementation testing for AI applications ($p = 0.011$); however, across all groups, the “strongly agree” option had the highest proportional response rate (Question C2). Regarding the necessity of providing regular training on AI use, agreement rates were significantly higher among surgical oncologists, while strong agreement was significantly more frequent among general surgeons ($p = 0.012$) (Question C3) (Table 3).

Discussion

In our study, the majority of participants reported having little or no knowledge regarding the use of artificial intelligence (AI) in endoscopic diagnosis, patient management, treatment planning, and the related ethical and legal regulations. Most participants expressed moderate concerns regarding ethical issues, legal liability, and data security associated with AI applications. There was a high level of agreement among participants regarding the use of AI as an assistive tool in clinical decision-making, the need for regulatory oversight, the importance of education on AI use and ethics, and the necessity of informing patients in detail. Male participants demonstrated significantly lower rates of AI use but expressed significantly greater concerns about erroneous outputs of AI systems. Participants with 21–25 years of professional experience were

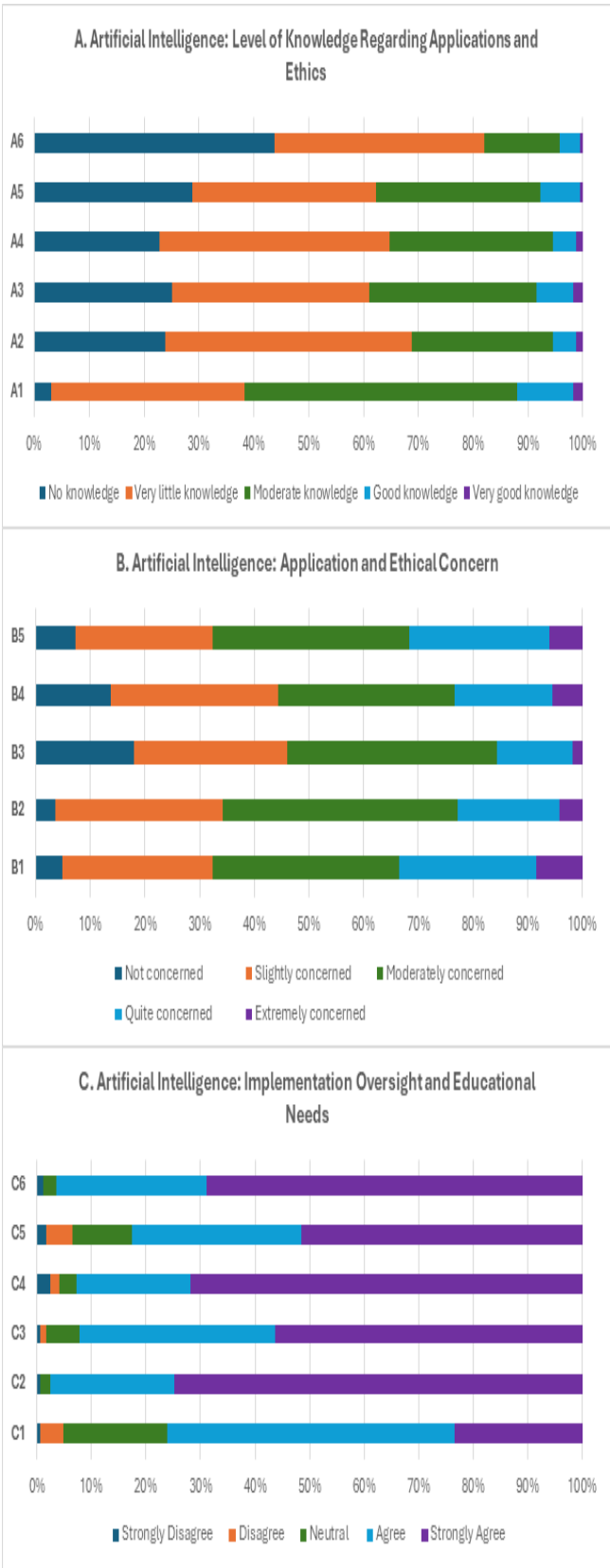


Figure 1. Distribution (percentage) of the answers given by the participants per question

significantly less likely to believe that AI would inevitably cause ethical issues. Concerns about erroneous responses from AI applications were significantly higher among gastrointestinal surgeons, while surgical oncologists strongly agreed on the necessity of AI as an assistive tool, and general surgeons emphasized the need for regular training on AI use. With advances in medicine, there has been a growing need for

Table 3: Distribution of survey responses by general surgery specialty/subspecialty, years of professional experience, and gender

		Subspecialty area within general surgery			P	Duration of professional experience (years)						P	Gender		P
		General surgery	Surgical oncology	Gastrointestinal surgery		<5 (n=37)	6-10 (n=39)	11-15 (n=32)	16-20 (n=18)	21-25 (n=13)	>26 (n=28)		Female (n=21)	Male (n=146)	
B2. Please indicate your level of concern about the possibility that artificial intelligence algorithms may produce biased or erroneous outcomes during their use.	Not concerned	3 (2.2) a	2 (11.1) a	1 (6.7) a	0.046*							1 (4.8) a	5 (3.4) a	0.007*	
	Slightly concerned	44 (32.8) a	3 (16.7) a	4 (26.7) a								4 (19) a	47 (32.2) a		
	Moderately concerned	56 (41.8) a	12 (66.7) a	4 (26.7) a								6 (28.6) a	66 (45.2) a		
	Quite concerned	24 (17.9) ab	1 (5.6) b	6 (40) a								10 (47.6) a	21 (14.4) b		
	Extremely concerned	7 (5.2) a	0 (0) a	0 (0) a								0 (0) a	7 (4.8) a		
C1. In your opinion, should artificial intelligence applications assist physicians in the decision-making process?	Strongly disagree	0 (0) a	0 (0) a	1 (6.7) b	0.006*										
	disagree	6 (4.5) a	1 (5.6) a	0 (0) a											
	Neutral	26 (19.4) a	1 (5.6) a	5 (33.3) a											
	Agree	66 (49.3) a	15 (83.3) b	7 (46.7) ab											
	Strongly agree	36 (26.9) a	1 (5.6) a	2 (13.3) a											
C2. Do you think artificial intelligence applications should undergo comprehensive testing processes before being implemented?	Strongly disagree	0 (0) a	0 (0) a	1 (6.7) b	0.011*										
	Disagree	0 (0) a	0 (0) a	0 (0) a											
	Neutral	3 (2.2) a	0 (0) a	0 (0) a											
	Agree	26 (19.4) a	8 (44.4) a	4 (26.7) a											
	Strongly agree	105 (78.4) a	10 (55.6) a	10 (66.7) a											
C3. Do you think regular training should be provided regarding the use of artificial intelligence applications?	Strongly disagree	0 (0) a	0 (0) a	1 (6.7) b	0.012*										
	Disagree	2 (1.5) a	0 (0) a	0 (0) a											
	Neutral	9 (6.7) a	1 (5.6) a	0 (0) a											
	Agree	43 (32.1) a	12 (66.7) b	5 (33.3) ab											
	Strongly agree	80 (59.7) a	5 (27.8) b	9 (60) ab											
D1. Do you use any artificial intelligence (AI) applications?	No				12 (32.4) a	16 (41) ab	11 (34.4) a	10 (55.6) ab	5 (38.5)ab	21 (75) b	0.009*	5 (23.8)	70 (47.9)	0.038*	
	Yes				25 (67.6) a	23 (59) ab	21 (65.6) a	8 (44.4) ab	8 (61.5) ab	7 (25) b		16 (76.2)	76 (52.1)		
D2. What do you think about the possibility that the use of AI applications may lead to ethical problems?	No, I don't think so				1 (2.7) a	0 (0) a	3 (9.4) a	0 (0) a	0 (0) a	2 (7.1) a	0.040*				
	No, I don't really think so				4 (10.8) a	10 (25.6) a	5 (15.6) a	2 (11.1) a	1 (7.7) a	6 (21.4) a					
	Yes, in certain situations				29 (78.4) a	28 (71.8) a	22 (68.8) a	15 (83.3) a	8 (61.5) a	20 (71.4) a					
	Yes, definitely				3 (8.1) abc	1 (2.6) c	2 (6.3) abc	1 (5.6) abc	4 (30.8) b	0 (0) ac					

innovative technologies and new methods to address diagnostic, treatment, and management gaps in gastrointestinal (GI) diseases. Owing to its strong data analysis capacity and increasing popularity, AI has shown high potential in addressing these challenges [11]. Deep learning-based imaging and detection algorithms have been integrated into wearable medical devices for early disease alerts and healthcare management [12]. Consequently, some AI algorithms have begun to enter routine clinical practice in upper and lower GI endoscopy, assisting with early diagnosis, differential diagnosis, and assessment of tumor invasion depth [13–15].

However, despite progress in AI applications in endoscopy and other medical fields, issues such as data standardization and sharing, algorithm interpretability and safety, and unresolved ethical and legal concerns remain [11]. Particularly in the diagnosis and treatment of GI cancers, the clinical utility of AI applications depends not only on high diagnostic accuracy but also on clinicians' understanding of and confidence in these technologies [16]. The complexity of AI models, with millions of parameters, their reliance on specific datasets, limited applicability to real-world data, and the lack of continuous learning mechanisms, all hinder transparency and trust in decision-making processes. Moreover, since 2022, only approximately 43% of AI-based medical devices approved by the U.S. Food and Drug Administration (FDA) have published clinical validation data, and less than 5% have been validated through prospective randomized controlled trials [17]. This situation negatively affects clinicians' trust in and acceptance of AI for diagnostic, therapeutic, and follow-up purposes [18–20]. In our study, most participants expressed moderate concerns about data security in AI applications. Male participants and gastrointestinal surgeons were significantly more concerned about erroneous responses from AI systems.

During GI endoscopy, the accuracy of optical diagnosis often falls below expectations and varies significantly among endoscopists. To address this, computer-aided diagnosis (CADx) using AI has been introduced. Recent prospective studies have shown that collaborative use of AI with human endoscopists does not significantly improve diagnostic accuracy compared to human judgment alone [21–22]. Furthermore, one randomized trial demonstrated that fully autonomous AI systems (without human assistance) outperformed human-AI collaboration in diagnostic accuracy [23]. Although autonomous AI tools are not yet widely adopted in endoscopy, many endoscopists perceive them as either too futuristic or legally problematic, emphasizing the need for strict oversight of every aspect of model development to ensure fairness, safety, efficacy, and ethical compliance. Regular audits, algorithm transparency, and clinician training are considered crucial for building trust and accountability [24–25]. In our study, the majority of participants agreed that AI should only serve as an assistive tool in clinical decision-making and that its applications should be subject to regulatory oversight.

Another critical aspect of using AI in clinical endoscopic practice involves ethical, legal, safety, and regulatory factors. In particular, the use of AI in healthcare raises concerns about patient privacy violations, algorithmic bias leading to unfair outcomes, and uncertainties regarding accountability for AI-driven decisions

[11]. When an AI system provides a misdiagnosis, questions arise regarding whether responsibility lies with the clinician, the hospital, regulatory bodies, or the system developers. Moreover, trust in autonomous systems remains a major barrier, as delegating diagnostic authority to machines and excluding human involvement may cause significant discomfort among patients and healthcare professionals [24]. In our study, most participants reported moderate concerns regarding AI applications and indicated limited knowledge about the use of AI in endoscopic diagnosis, patient management, treatment planning, and relevant ethical and legal regulations. They also agreed on the need for education on AI use and ethics, as well as the necessity of detailed patient information. Participants with 21–25 years of professional experience were significantly less likely to believe that AI would inevitably cause ethical issues, and general surgeons strongly agreed on the need for regular training in AI applications.

Limitation

This study has several limitations. First, it was a content-focused survey conducted solely among general surgeons, gastrointestinal surgeons, and surgical oncologists, which may limit the generalizability of the findings to the broader healthcare system. Although the sample size was calculated appropriately, a larger national sample considering variables such as age, gender, years of professional experience, academic title, type of institution, and surgical specialty or subspecialty would have strengthened the study's results. Furthermore, while the study assessed ethical concerns, larger-scale approaches such as the Delphi method could have been used for a more comprehensive evaluation; however, this would have made it more difficult to reach a sufficiently large sample.

Conclusion

In conclusion, this study revealed that general surgery specialists and subspecialists in Türkiye have limited knowledge regarding the use of AI applications in endoscopy and the related ethical and legal regulations. They also expressed concerns about trust, ethical, and legal issues. There was a consensus that AI should be used solely as an assistive tool in clinical decision-making, that its applications should be regularly audited, and that formal training should be provided. Moving forward, it is essential to incorporate the perspectives of general surgery specialists and subspecialists—who are potential end users—into the development of these systems to comprehensively address issues related to trust, legal and ethical considerations, oversight, and education.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Funding: None

Conflict of Interest

The authors declare that there is no conflict of interest.

References

1. Chahal D, Byrne MF. A primer on artificial intelligence and its application to endoscopy. *Gastrointest Endosc*. 2020;92(4):813-20.e4.
2. Hamet P, Tremblay J. Artificial intelligence in medicine. *Metabolism*. 2017;69(Suppl):36-40.
3. Luo R, Zeng Q, Chen H. Artificial intelligence algorithm-based MRI for differentiation diagnosis of prostate cancer. *Comput Math Methods Med*. 2022;2022:8123643.
4. Cheng G, Zhang F, Xing Y, et al. Artificial intelligence-assisted score analysis for predicting the expression of the immunotherapy biomarker PD-L1 in lung cancer. *Front Immunol*. 2022;13:893198.
5. Jiang F, Jiang Y, Zhi H, et al. Artificial intelligence in healthcare: past, present and future. *Stroke Vasc Neurol*. 2017;2(3):230-43.
6. Plana D, Shung DL, Grimshaw AA, Saraf A, Sung JY, Kann BH. Randomized clinical trials of machine learning interventions in health care: a systematic review. *JAMA Netw Open*. 2022;5(12):2233946.
7. Weusten B, Bisschops R, Coron E, et al. Endoscopic management of Barrett's esophagus: European Society of Gastrointestinal Endoscopy (ESGE) position statement. *Endoscopy*. 2017;49(2):191-8.
8. Ebigo A, Mendel R, Probst A, et al. Real-time use of artificial intelligence in the evaluation of cancer in Barrett's oesophagus. *Gut*. 2020;69(4):615-6.
9. Li L, Chen Y, Shen Z, et al. Convolutional neural network for the diagnosis of early gastric cancer based on magnifying narrow band imaging. *Gastric Cancer*. 2020;23(1):126-32.
10. Koçer Tulgar Y, Tulgar S, Güven Köse S, et al. Anesthesiologists' perspective on the use of artificial intelligence in ultrasound-guided regional anaesthesia in terms of medical ethics and medical education: a survey study. *Eurasian J Med*. 2023;55(2):146-51.
11. Gao Y, Wen P, Liu Y, et al. Application of artificial intelligence in the diagnosis of malignant digestive tract tumors: focusing on opportunities and challenges in endoscopy and pathology. *J Transl Med*. 2025;23(1):412.
12. N. Wang J, Zhou G, Dai J, Xie Y. Energy-efficient intelligent ECG monitoring for wearable devices. *IEEE Trans Biomed Circuits Syst*. 2019;13(5):1112-21.
13. Wallace MB, Sharma P, Bhandari P, et al. Impact of artificial intelligence on miss rate of colorectal neoplasia. *Gastroenterology*. 2022;163(1):295-304.e5.
14. Tang D, Wang L, Jiang J, et al. A novel deep learning system for diagnosing early esophageal squamous cell carcinoma: a multicenter diagnostic study. *Clin Transl Gastroenterol*. 2021;12(8):00393.
15. Kudo SE, Misawa M, Mori Y, et al. Artificial intelligence-assisted system improves endoscopic identification of colorectal neoplasms. *Clin Gastroenterol Hepatol*. 2020;18(8):1874-81.
16. Hatherley J, Sparrow R, Howard M. The virtues of interpretable medical AI. *Camb Q Healthc Ethics*. 2024;33(3):323-32.
17. Chouffani El Fassi S, Abdullah A, Fang Y, et al. Author correction: not all AI health tools with regulatory authorization are clinically validated. *Nat Med*. 2024;30(11):3381.
18. Sidak D, Schwarzerová J, Weckwerth W. Interpretable machine learning methods for predictions in systems biology from omics data. *Front Mol Biosci*. 2022;9:926623.
19. Gimeno M, Sada Del Real K, Rubio A. Precision oncology: a review to assess interpretability in several explainable methods. *Brief Bioinform*. 2023;24(4):bbad200.
20. Kirkpatrick J, Pascanu R, Rabinowitz N, et al. Overcoming catastrophic forgetting in neural networks. *Proc Natl Acad Sci USA*. 2017;114(13):3521-6.
21. Rondonotti E, Hassan C, Tamanini G, et al. Artificial intelligence-assisted optical diagnosis for the resect-and-discard strategy in clinical practice: the Artificial intelligence BLI Characterization (ABC) study. *Endoscopy*. 2023;55(1):14-22.
22. Rex DK, Bhavsar-Burke I, Buckles D, et al. Artificial intelligence for real-time prediction of the histology of colorectal polyps by general endoscopists. *Ann Intern Med*. 2024;177:911-8.
23. Djinbachian R, Haumesser C, Taghiakbari M, et al. Autonomous artificial intelligence vs artificial intelligence-assisted human optical diagnosis of colorectal polyps: a randomized controlled trial. *Gastroenterology*. 2024;167(2):392-9.e2.
24. Schulz PJ, Lwin MO, Kee KM. Modeling the influence of attitudes, trust, and beliefs on endoscopists' acceptance of artificial intelligence applications in medical practice. *Front Public Health*. 2023;11:1301563.
25. Cross JL, Choma MA, Onofrey JA. Bias in medical AI: implications for clinical decision-making. *PLOS Digit Health*. 2024;3(11):0000651.

How to cite this article: Mehmet Alperen Avcı, Can Akgün. Expert perspectives on the use of artificial intelligence in surgical endoscopy: Ethical and legal considerations in Türkiye. *Ann Clin Anal Med* 2025;16(9):646-652

This study was approved by the Ethics Committee of Samsun University (Date: 2025-04-30, No: GOKAEK 2025/9/14).